



SEQUENCE LISTING

<110> Bertin, John
Wang, Weiye
Blatcher, Maria

<120> NOVEL MOLECULES OF THE NBS/LRR PROTEIN FAMILY AND USES THEREOF

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<140> US 09/986,224
2001-10-22

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Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu
35 40 45
gct gat ggc aag aaa ctg gca gaa att ctg gtc aac acc tcc tca gaa 192
Ala Asp Gly Lys Lys Leu Ala Glu Ile Leu Val Asn Thr Ser Ser Glu
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aat tgg ata agg aat gcg act gtg aac atc ttg gaa gag atg aat ctc 240
Asn Trp Ile Arg Asn Ala Thr Val Asn Ile Leu Glu Glu Met Asn Leu
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acg gaa ttg tgt aag atg gca aag gct gag atg gag gac gga cag 288
Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln
85 90 95

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Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp			
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785	790
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 Thr Arg Pro Lys His Phe Leu Gln Met Leu Ser Leu Glu Asn Cys Arg
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 gtg ttc ctg atg gga gag aga gca tct gga aaa act att gtt ata aat 384
 Val Phe Leu Met Gly Glu Arg Ala Ser Gly Lys Thr Ile Val Ile Asn
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565	570	575	

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580	585	590	
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Ile Trp Asn Met Leu Phe Ser Ile Phe Ser Met Met Arg Lys Glu Asp			
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Leu Cys Arg Lys Ile Ile Gly Arg Arg Asn His Val Phe Tyr Ile Leu			
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Ser Ser Leu Ala Glu Leu Ile Ala Lys Asp Trp Pro Asp Gly Gln Ala			
165	170	175	
Pro Ile Ala Asp Ile Leu Ser Asp Pro Lys Lys Leu Leu Phe Ile Leu			
180	185	190	
Glu Asp Leu Asp Asn Ile Arg Phe Glu Leu Asn Val Asn Glu Ser Ala			
195	200	205	
Leu Cys Ser Asn Ser Thr Gln Lys Val Pro Ile Pro Val Leu Leu Val			
210	215	220	
Ser Leu Leu Lys Arg Lys Met Ala Pro Gly Cys Trp Phe Leu Ile Ser			
225	230	235	240
Ser Arg Pro Thr Arg Gly Asn Asn Val Lys Thr Phe Leu Lys Glu Val			
245	250	255	
Asp Cys Cys Thr Thr Leu Gln Leu Ser Asn Gly Lys Arg Glu Ile Tyr			
260	265	270	

Phe Asn Ser Phe Phe Lys Asp Arg Gln Arg Ala Ser Ala Ala Leu Gln
 275 280 285
 Leu Val His Glu Asp Glu Ile Leu Val Gly Leu Cys Arg Val Ala Ile
 290 295 300
 Leu Cys Trp Ile Thr Cys Thr Val Leu Lys Arg Gln Met Asp Lys Gly
 305 310 315 320
 Arg Asp Phe Gln Leu Cys Cys Gln Thr Pro Thr Asp Leu His Ala His
 325 330 335
 Phe Leu Ala Asp Ala Leu Thr Ser Glu Ala Gly Leu Thr Ala Asn Gln
 340 345 350
 Tyr His Leu Gly Leu Leu Lys Arg Leu Cys Leu Leu Ala Ala Gly Gly
 355 360 365
 Leu Phe Leu Ser Thr Leu Asn Phe Ser Gly Glu Asp Leu Arg Cys Val
 370 375 380
 Gly Phe Thr Glu Ala Asp Val Ser Val Leu Gln Ala Ala Asn Ile Leu
 385 390 395 400
 Leu Pro Ser Asn Thr His Lys Asp Arg Tyr Lys Phe Ile His Leu Asn
 405 410 415
 Val Gln Glu Phe Cys Thr Ala Ile Ala Phe Leu Met Ala Val Pro Asn
 420 425 430
 Tyr Leu Ile Pro Ser Gly Ser Arg Glu Tyr Lys Glu Lys Arg Glu Gln
 435 440 445
 Tyr Ser Asp Phe Asn Gln Val Phe Thr Phe Ile Phe Gly Leu Leu Asn
 450 455 460
 Ala Asn Arg Arg Lys Ile Leu Glu Thr Ser Phe Gly Tyr Gln Leu Pro
 465 470 475 480
 Met Val Asp Ser Phe Lys Trp Tyr Ser Val Gly Tyr Met Lys His Leu
 485 490 495
 Asp Arg Asp Pro Glu Lys Leu Thr His His Met Pro Leu Phe Tyr Cys
 500 505 510
 Leu Tyr Glu Asn Arg Glu Glu Glu Phe Val Lys Thr Ile Val Asp Ala
 515 520 525
 Leu Met Glu Val Thr Val Tyr Leu Gln Ser Asp Lys Asp Met Met Val
 530 535 540
 Ser Leu Tyr Cys Leu Asp Tyr Cys Cys His Leu Arg Thr Leu Lys Leu
 545 550 555 560
 Ser Val Gln Arg Ile Phe Gln Asn Lys Glu Pro Leu Ile Arg Pro Thr
 565 570 575
 Ala Ser Gln Met Lys Ser Leu Val Tyr Trp Arg Glu Ile Cys Ser Leu
 580 585 590
 Phe Tyr Thr Met Glu Ser Leu Arg Glu Leu His Ile Phe Asp Asn Asp
 595 600 605
 Leu Asn Gly Ile Ser Glu Arg Ile Leu Ser Lys Ala Leu Glu His Ser
 610 615 620
 Ser Cys Lys Leu Arg Thr Leu
 625 630

<210> 5
 <211> 1566
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)...(1563)

<400> 5
atg aag gct gaa cta ctg gag aca tgg gac aac atc agt tgg cct aaa 48
Met Lys Ala Glu Leu Leu Glu Thr Trp Asp Asn Ile Ser Trp Pro Lys
1 5 10 15

gac cac gta tat atc cgt aat aca tca aag gac gaa cat gag gaa ctg 96
Asp His Val Tyr Ile Arg Asn Thr Ser Lys Asp Glu His Glu Glu Leu
20 25 30

cag cgc cta ctg gat cct aat agg act aga gcc cag gcc cag acg ata 144
Gln Arg Leu Leu Asp Pro Asn Arg Thr Arg Ala Gln Ala Gln Thr Ile
35 40 45

gtc ttg gtg ggg agg gca ggg gtt ggg aag acc acc ttg gca atg cag 192
Val Leu Val Gly Arg Ala Gly Val Gly Lys Thr Thr Leu Ala Met Gln
50 55 60

gct atg ctg cac tgg gca aat gga gtt ctc ttt cag caa agg ttc tcc 240
Ala Met Leu His Trp Ala Asn Gly Val Leu Phe Gln Gln Arg Phe Ser
65 70 75 80

tat gtt ttc tat ctc agc tgc cat aaa ata agg tac atg aag gaa act 288
Tyr Val Phe Tyr Leu Ser Cys His Lys Ile Arg Tyr Met Lys Glu Thr
85 90 95

acc ttt gct gaa ttg att tct ttg gat tgg ccc gat ttt gat gcc ccc 336
Thr Phe Ala Glu Leu Ile Ser Leu Asp Trp Pro Asp Phe Asp Ala Pro
100 105 110

att gaa gag ttc atg tct caa cca gag aag ctc ctg ttt att att gat 384
Ile Glu Glu Phe Met Ser Gln Pro Glu Lys Leu Leu Phe Ile Ile Asp
115 120 125

ggc ttt gag gaa ata atc ata tct gag tca cgc tct gag agc ttg gat 432
Gly Phe Glu Glu Ile Ile Ser Glu Ser Arg Ser Glu Ser Leu Asp
130 135 140

gat ggc tcg cca tgt aca gac tgg tac cag gag ctc cca gtg acc aaa 480
Asp Gly Ser Pro Cys Thr Asp Trp Tyr Gln Glu Leu Pro Val Thr Lys
145 150 155 160

atc cta cac agc ttg ttg aag aaa gaa ttg gtt ccc ctg gct acc tta 528
Ile Leu His Ser Leu Leu Lys Lys Glu Leu Val Pro Leu Ala Thr Leu
165 170 175

ctg atc acg atc aag acc tgg ttt gtg aga gat ctt aag gcc tca tta 576
Leu Ile Thr Ile Lys Thr Trp Phe Val Arg Asp Leu Lys Ala Ser Leu
180 185 190

gtg aat cca tgc ttt gta caa att aca ggg ttc aca ggg gac gac cta 624
Val Asn Pro Cys Phe Val Gln Ile Thr Gly Phe Thr Gly Asp Asp Leu
195 200 205

cgg gta tat ttc atg aga cac ttt gat gac tca agt gaa gtt gag aaa 672
Arg Val Tyr Phe Met Arg His Phe Asp Asp Ser Ser Glu Val Glu Lys
210 215 220

atc ctg cag cag cta aga aaa aac gaa act ctc ttt cat tcc tgc agt Ile Leu Gln Gln Leu Arg Lys Asn Glu Thr Leu Phe His Ser Cys Ser 225 230 235 240	720
gcc ccc atg gtg tgt tgg acc gta tgt tcc tgt ctg aag cag ccg aag Ala Pro Met Val Cys Trp Thr Val Cys Ser Cys Leu Lys Gln Pro Lys 245 250 255	768
gtg agg tat tac gat ctc cag tca atc act cag act acc acc agt ctg Val Arg Tyr Tyr Asp Leu Gln Ser Ile Thr Gln Thr Thr Ser Leu 260 265 270	816
tat gcc tat ttt ttc tcc aac ttg ttc tcc aca gca gag gta gat ttg Tyr Ala Tyr Phe Ser Asn Leu Phe Ser Thr Ala Glu Val Asp Leu 275 280 285	864
gca gat gac agc tgg cca gga caa tgg agg gcc ctc tgc agt ctg gcc Ala Asp Asp Ser Trp Pro Gly Gln Trp Arg Ala Leu Cys Ser Leu Ala 290 295 300	912
ata gaa ggg ctg tgg tct atg aac ttc acg ttt aac aaa gaa gac act Ile Glu Gly Leu Trp Ser Met Asn Phe Thr Phe Asn Lys Glu Asp Thr 305 310 315 320	960
gag atc gag ggc ctg gaa gtg cct ttc att gat tct ctc tac gag ttc Glu Ile Glu Gly Leu Glu Val Pro Phe Ile Asp Ser Leu Tyr Glu Phe 325 330 335	1008
aat att ctt caa aag atc aat gac tgt ggg ggt tgc act act ttc acc Asn Ile Leu Gln Lys Ile Asn Asp Cys Gly Gly Cys Thr Thr Phe Thr 340 345 350	1056
cac cta agt ttc cag gag ttt ttt gca gcc atg tcc ttt gtg cta gag His Leu Ser Phe Gln Glu Phe Phe Ala Ala Met Ser Phe Val Leu Glu 355 360 365	1104
gaa cct aga gaa ttc cct ccc cat tcc aca aag cca caa gag atg aag Glu Pro Arg Glu Phe Pro Pro His Ser Thr Lys Pro Gln Glu Met Lys 370 375 380	1152
atg tta ctg caa cac gtc ttg ctt gac aaa gaa gcc tac tgg act cca Met Leu Leu Gln His Val Leu Leu Asp Lys Glu Ala Tyr Trp Thr Pro 385 390 395 400	1200
gtg gtt ctg ttc ttc ttt ggt ctt tta aat aaa aac ata gca aga gaa Val Val Leu Phe Phe Gly Leu Leu Asn Lys Asn Ile Ala Arg Glu 405 410 415	1248
ctg gaa gat act ttg cat tgt aaa ata tct ccc agg gta atg gag gaa Leu Glu Asp Thr Leu His Cys Lys Ile Ser Pro Arg Val Met Glu Glu 420 425 430	1296
tta tta aag tgg gga gaa gag tta ggt aag gct gaa agt gcc tct ctc Leu Leu Lys Trp Gly Glu Glu Leu Gly Lys Ala Glu Ser Ala Ser Leu 435 440 445	1344

caa ttt cac att cta cga ctt ttt cac tgc cta cac gag tcc cag gag	1392		
Gln Phe His Ile Leu Arg Leu Phe His Cys Leu His Glu Ser Gln Glu			
450	455	460	
gaa gac ttc aca aag aag atg ttg ggt cgt atc ttt gaa gtt gac ctt	1440		
Glu Asp Phe Thr Lys Lys Met Leu Gly Arg Ile Phe Glu Val Asp Leu			
465	470	475	480
aat att ttg gag gac gaa gaa ctc caa gct tct tca ttt tgc cta aag	1488		
Asn Ile Leu Glu Asp Glu Glu Leu Gln Ala Ser Ser Phe Cys Leu Lys			
485	490	495	
cac tgt aaa agg tta aat aag cta agg ctt tct gtt agc agt cac atc	1536		
His Cys Lys Arg Leu Asn Lys Leu Arg Leu Ser Val Ser Ser His Ile			
500	505	510	
ctt gaa agg gac ttg gaa att ctg gag tga	1566		
Leu Glu Arg Asp Leu Glu Ile Leu Glu			
515	520		
<210> 6			
<211> 521			
<212> PRT			
<213> Homo sapiens			
<400> 6			
Met Lys Ala Glu Leu Leu Glu Thr Trp Asp Asn Ile Ser Trp Pro Lys			
1	5	10	15
Asp His Val Tyr Ile Arg Asn Thr Ser Lys Asp Glu His Glu Glu Leu			
20	25	30	
Gln Arg Leu Leu Asp Pro Asn Arg Thr Arg Ala Gln Ala Gln Thr Ile			
35	40	45	
Val Leu Val Gly Arg Ala Gly Val Gly Lys Thr Thr Leu Ala Met Gln			
50	55	60	
Ala Met Leu His Trp Ala Asn Gly Val Leu Phe Gln Gln Arg Phe Ser			
65	70	75	80
Tyr Val Phe Tyr Leu Ser Cys His Lys Ile Arg Tyr Met Lys Glu Thr			
85	90	95	
Thr Phe Ala Glu Leu Ile Ser Leu Asp Trp Pro Asp Phe Asp Ala Pro			
100	105	110	
Ile Glu Glu Phe Met Ser Gln Pro Glu Lys Leu Leu Phe Ile Ile Asp			
115	120	125	
Gly Phe Glu Glu Ile Ile Ile Ser Glu Ser Arg Ser Glu Ser Leu Asp			
130	135	140	
Asp Gly Ser Pro Cys Thr Asp Trp Tyr Gln Glu Leu Pro Val Thr Lys			
145	150	155	160
Ile Leu His Ser Leu Leu Lys Lys Glu Leu Val Pro Leu Ala Thr Leu			
165	170	175	
Leu Ile Thr Ile Lys Thr Trp Phe Val Arg Asp Leu Lys Ala Ser Leu			
180	185	190	
Val Asn Pro Cys Phe Val Gln Ile Thr Gly Phe Thr Gly Asp Asp Leu			
195	200	205	
Arg Val Tyr Phe Met Arg His Phe Asp Asp Ser Ser Glu Val Glu Lys			
210	215	220	
Ile Leu Gln Gln Leu Arg Lys Asn Glu Thr Leu Phe His Ser Cys Ser			
225	230	235	240

Ala Pro Met Val Cys Trp Thr Val Cys Ser Cys Leu Lys Gln Pro Lys
 245 250 255
 Val Arg Tyr Tyr Asp Leu Gln Ser Ile Thr Gln Thr Thr Ser Leu
 260 265 270
 Tyr Ala Tyr Phe Phe Ser Asn Leu Phe Ser Thr Ala Glu Val Asp Leu
 275 280 285
 Ala Asp Asp Ser Trp Pro Gly Gln Trp Arg Ala Leu Cys Ser Leu Ala
 290 295 300
 Ile Glu Gly Leu Trp Ser Met Asn Phe Thr Phe Asn Lys Glu Asp Thr
 305 310 315 320
 Glu Ile Glu Gly Leu Glu Val Pro Phe Ile Asp Ser Leu Tyr Glu Phe
 325 330 335
 Asn Ile Leu Gln Lys Ile Asn Asp Cys Gly Gly Cys Thr Thr Phe Thr
 340 345 350
 His Leu Ser Phe Gln Glu Phe Phe Ala Ala Met Ser Phe Val Leu Glu
 355 360 365
 Glu Pro Arg Glu Phe Pro Pro His Ser Thr Lys Pro Gln Glu Met Lys
 370 375 380
 Met Leu Leu Gln His Val Leu Leu Asp Lys Glu Ala Tyr Trp Thr Pro
 385 390 395 400
 Val Val Leu Phe Phe Gly Leu Leu Asn Lys Asn Ile Ala Arg Glu
 405 410 415
 Leu Glu Asp Thr Leu His Cys Lys Ile Ser Pro Arg Val Met Glu Glu
 420 425 430
 Leu Leu Lys Trp Gly Glu Glu Leu Gly Lys Ala Glu Ser Ala Ser Leu
 435 440 445
 Gln Phe His Ile Leu Arg Leu Phe His Cys Leu His Glu Ser Gln Glu
 450 455 460
 Glu Asp Phe Thr Lys Lys Met Leu Gly Arg Ile Phe Glu Val Asp Leu
 465 470 475 480
 Asn Ile Leu Glu Asp Glu Glu Leu Gln Ala Ser Ser Phe Cys Leu Lys
 485 490 495
 His Cys Lys Arg Leu Asn Lys Leu Arg Leu Ser Val Ser Ser His Ile
 500 505 510
 Leu Glu Arg Asp Leu Glu Ile Leu Glu
 515 520

<210> 7
 <211> 2575
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (2)...(2575)

<400> 7
 c agc cgc tta tgg tcc agc aag tct gtc act gag att cac cta tac ttt 49
 Ser Arg Leu Trp Ser Ser Lys Ser Val Thr Glu Ile His Leu Tyr Phe
 1 5 10 15
 gag gag gaa gtc aag caa gaa gaa tgt gac cat ttg gac cgc ctt ttt
 97
 Glu Glu Glu Val Lys Gln Glu Glu Cys Asp His Leu Asp Arg Leu Phe
 20 25 30

gct ccc aag gaa gct ggg aaa cag cca cgt aca gtg atc att caa gga Ala Pro Lys Glu Ala Gly Lys Gln Pro Arg Thr Val Ile Ile Gln Gly	35	40	45	145	
cca caa gga att gga aaa acg aca ctc ctg atg aag ctg atg atg gcc Pro Gln Gly Ile Gly Lys Thr Thr Leu Leu Met Lys Leu Met Met Ala	50	55	60	193	
tgg tcg gac aac aag atc ttt cgg gat agg ttc ctg tac acg ttc tat Trp Ser Asp Asn Lys Ile Phe Arg Asp Arg Phe Leu Tyr Thr Phe Tyr	65	70	75	80	241
ttc tgc tgc aga gaa ctg agg ttg ccg cca acg agt ttg gct gac Phe Cys Cys Arg Glu Leu Arg Glu Leu Pro Pro Thr Ser Leu Ala Asp	85	90	95	289	
ttg att tcc aga gag tgg cct gac ccc gct gct cct ata aca gag atc Leu Ile Ser Arg Glu Trp Pro Asp Pro Ala Ala Pro Ile Thr Glu Ile	100	105	110	337	
gtg tct caa ccg gag aga ctc ttg ttc gtc atc gac agc ttc gaa gag Val Ser Gln Pro Glu Arg Leu Leu Phe Val Ile Asp Ser Phe Glu Glu	115	120	125	385	
ctg cag ggc ggc ttg aac gaa ccc gat tcg gat ctg tgt ggt gac ttg Leu Gln Gly Gly Leu Asn Glu Pro Asp Ser Asp Leu Cys Gly Asp Leu	130	135	140	433	
atg gag aaa cgg ccg gtg cag gtg ctt ctg agc agt ttg ctg agg aag Met Glu Lys Arg Pro Val Gln Val Leu Ser Ser Leu Leu Arg Lys	145	150	155	160	481
aag atg ctc ccg gag gcc tcc ctg ctc atc gct atc aaa ccc gtg tgc Lys Met Leu Pro Glu Ala Ser Leu Leu Ile Ala Ile Lys Pro Val Cys	165	170	175	529	
ccg aag gag ctc ccg gat cag gtg acg atc tca gaa atc tac cag ccc Pro Lys Glu Leu Arg Asp Gln Val Thr Ile Ser Glu Ile Tyr Gln Pro	180	185	190	577	
ccg gga ttc aac gag agt gat agg tta gtg tat ttc tgc tgt ttc ttc Arg Gly Phe Asn Glu Ser Asp Arg Leu Val Tyr Phe Cys Cys Phe Phe	195	200	205	625	
aaa gac ccg aaa aga gcc atg gaa gcc ttc aat ctt gta aga gaa agt Lys Asp Pro Lys Arg Ala Met Glu Ala Phe Asn Leu Val Arg Glu Ser	210	215	220	673	
gaa cag ctg ttt tcc ata tgc caa atc ccg ctc ctc tgc tgg atc ctg Glu Gln Leu Phe Ser Ile Cys Gln Ile Pro Leu Leu Cys Trp Ile Leu	225	230	235	240	721
tgt acc agt ctg aag caa gag atg cag aaa gga aaa gac ctg gcc ctg Cys Thr Ser Leu Lys Gln Glu Met Gln Lys Gly Lys Asp Leu Ala Leu	245	250	255	769	

acc tgc cag agc act acc tct gtg tac tcc tct ttc gtc ttt aac ctg	817
Thr Cys Gln Ser Thr Ser Val Tyr Ser Ser Phe Val Phe Asn Leu	
260 265 270	
ttc aca cct gag ggt gcc gag ggc ccg act ccg caa acc cag cac cag	865
Phe Thr Pro Glu Gly Ala Glu Gly Pro Thr Pro Gln Thr Gln His Gln	
275 280 285	
ctg aag gcc ctg tgc tcc ctg gct gca gag ggt atg tgg aca gac aca	913
Leu Lys Ala Leu Cys Ser Leu Ala Ala Glu Gly Met Trp Thr Asp Thr	
290 295 300	
ttt gag ttt tgt gaa gac gac ctc ccg aga aat ggg gtt gtt gac gct	961
Phe Glu Phe Cys Glu Asp Asp Leu Arg Arg Asn Gly Val Val Asp Ala	
305 310 315 320	
gac atc cct gcg ctg ctg ggc acc aag ata ctt ctg aag tac ggg gag	1009
Asp Ile Pro Ala Leu Leu Gly Thr Lys Ile Leu Leu Lys Tyr Gly Glu	
325 330 335	
cgt gag agc tcc tac gtg ttc ctc cac gtg tgt atc cag gag ttc tgt	1057
Arg Glu Ser Ser Tyr Val Phe Leu His Val Cys Ile Gln Glu Phe Cys	
340 345 350	
gcc gcc ttg ttc tat ttg ctc aag agc cac ctt gat cat cct cac cca	1105
Ala Ala Leu Phe Tyr Leu Leu Lys Ser His Leu Asp His Pro His Pro	
355 360 365	
gct gtg aga tgt gta cag gaa ttg cta gtt gcc aat ttt gaa aaa gca	1153
Ala Val Arg Cys Val Gln Glu Leu Leu Val Ala Asn Phe Glu Lys Ala	
370 375 380	
agg aga gca cat tgg att ttt ttg ggg tgt ttt cta act ggc ctt tta	1201
Arg Arg Ala His Trp Ile Phe Leu Gly Cys Phe Leu Thr Gly Leu Leu	
385 390 395 400	
aat aaa aag gaa caa gaa aaa ctg gat gcg ttt ttt ggc ttc caa ctg	1249
Asn Lys Lys Glu Gln Glu Lys Leu Asp Ala Phe Phe Gly Phe Gln Leu	
405 410 415	
tcc caa gag ata aag cag caa att cac cag tgc ctg aag agc tta ggg	1297
Ser Gln Glu Ile Lys Gln Gln Ile His Gln Cys Leu Lys Ser Leu Gly	
420 425 430	
gag cgt ggc aat cct cag gga cag gtg gat tcc ttg gcg ata ttt tac	1345
Glu Arg Gly Asn Pro Gln Gly Gln Val Asp Ser Leu Ala Ile Phe Tyr	
435 440 445	
tgt ctc ttt gaa atg cag gat cct gcc ttt gtg aag cag gca gtg aac	1393
Cys Leu Phe Glu Met Gln Asp Pro Ala Phe Val Lys Gln Ala Val Asn	
450 455 460	
ctc ctc caa gaa gct aac ttt cat att att gac aac gtg gac ttg gtg	1441
Leu Leu Gln Glu Ala Asn Phe His Ile Ile Asp Asn Val Asp Leu Val	
465 470 475 480	

gtt tct gcc tac tgc tta aaa tac tgc tcc agc ttg agg aaa ctc tgt		1489
Val Ser Ala Tyr Cys Leu Lys Tyr Cys Ser Ser Leu Arg Lys Leu Cys		
485	490	495
ttt tcc gtt caa aat gtc ttt aag aaa gag gat gaa cac agc tct acg		1537
Phe Ser Val Gln Asn Val Phe Lys Lys Glu Asp Glu His Ser Ser Thr		
500	505	510
tcg gat tac agc ctc atc tgt tgg cat cac atc tgc tct gtg ctc acc		1585
Ser Asp Tyr Ser Leu Ile Cys Trp His His Ile Cys Ser Val Leu Thr		
515	520	525
acc agc ggg cac ctc aga gag ctc cag gtg cag gac agc acc ctc agc		1633
Thr Ser Gly His Leu Arg Glu Leu Gln Val Gln Asp Ser Thr Leu Ser		
530	535	540
gag tcg acc ttt gtg acc tgg tgt aac cag ctg agg cat ccc agc tgt		1681
Glu Ser Thr Phe Val Thr Trp Cys Asn Gln Leu Arg His Pro Ser Cys		
545	550	555
560		
cgc ctt cag aag ctt gga ata aat aac gtt tcc ttt tct ggc cag agt		1729
Arg Leu Gln Lys Leu Gly Ile Asn Asn Val Ser Phe Ser Gly Gln Ser		
565	570	575
gtt ctg ctc ttt gag gtg ctc ttt tat cag cca gac ttg aaa tac ctg		1777
Val Leu Leu Phe Glu Val Leu Phe Tyr Gln Pro Asp Leu Lys Tyr Leu		
580	585	590
agc ttc acc ctc acg aaa ctc tct cgt gat gac atc agg tcc ctc tgt		1825
Ser Phe Thr Leu Thr Lys Leu Ser Arg Asp Asp Ile Arg Ser Leu Cys		
595	600	605
gat gcc ttg aac tac cca gca ggc aac gtc aaa gag cta gcg ctg gta		1873
Asp Ala Leu Asn Tyr Pro Ala Gly Asn Val Lys Glu Leu Ala Leu Val		
610	615	620
aat tgt cac ctc tca ccc att gat tgt gaa gtc ctt gct ggc ctt cta		1921
Asn Cys His Leu Ser Pro Ile Asp Cys Glu Val Leu Ala Gly Leu Leu		
625	630	635
640		
acc aac aac aag ctg acg tat ctg aat gta tcc tgc aac cag tta		1969
Thr Asn Asn Lys Leu Thr Tyr Leu Asn Val Ser Cys Asn Gln Leu		
645	650	655
gac aca ggc gtg ccc ctt ttg tgt gaa gcc ctg tgc agc cca gac acg		2017
Asp Thr Gly Val Pro Leu Leu Cys Glu Ala Leu Cys Ser Pro Asp Thr		
660	665	670
gtc ctg gta tac ctg atg ttg gct ttc tgc cac ctc agc gag cag tgc		2065
Val Leu Val Tyr Leu Met Leu Ala Phe Cys His Leu Ser Glu Gln Cys		
675	680	685
tgc gaa tac atc tct gaa atg ctt ctg cgt aac aag agc gtg cgc tat		2113
Cys Glu Tyr Ile Ser Glu Met Leu Leu Arg Asn Lys Ser Val Arg Tyr		
690	695	700

cta gac ctc agt gcc aat gtc ctg aag gac gaa gga ctg aaa act ctc	705	710	715	720	2161
Leu Asp Leu Ser Ala Asn Val Leu Lys Asp Glu Gly Leu Lys Thr Leu					
tgc gag gcc ttg aaa cat ccg gac tgc tgc ctg gat tca ctg tgt ttg	725	730	735		2209
Cys Glu Ala Leu Lys His Pro Asp Cys Cys Leu Asp Ser Leu Cys Leu					
gta aaa tgt ttt atc act gct gct ggc tgt gaa gac ctc gcc tct gct	740	745	750		2257
Val Lys Cys Phe Ile Thr Ala Ala Gly Cys Glu Asp Leu Ala Ser Ala					
ctc atc agc aat caa aac ctg aag att ctg caa att ggg tgc aat gaa	755	760	765		2305
Leu Ile Ser Asn Gln Asn Leu Lys Ile Leu Gln Ile Gly Cys Asn Glu					
atc gga gat gtg ggt gtg cag ctg ttg tgt cgg gct ctg acg cat acg	770	775	780		2353
Ile Gly Asp Val Gly Val Gln Leu Leu Cys Arg Ala Leu Thr His Thr					
gat tgc cgc tta gag att ctt ggg ttg gaa gaa tgt ggg tta acg acg	785	790	795	800	2401
Asp Cys Arg Leu Glu Ile Leu Gly Leu Glu Glu Cys Gly Leu Thr Ser					
acc tgc tgt aag gat ctc gcg tct gtt ctc acc tgc agt aag acc ctg	805	810	815		2449
Thr Cys Cys Lys Asp Leu Ala Ser Val Leu Thr Cys Ser Lys Thr Leu					
cag cag ctc aac ctg acc ttg aac acc ttg gac cac aca ggg gtg gtt	820	825	830		2497
Gln Gln Leu Asn Leu Thr Leu Asn Thr Leu Asp His Thr Gly Val Val					
gta ctc tgt gag gcc ctg aga cac cca gag tgt gcc ctg cag gtg ctc	835	840	845		2545
Val Leu Cys Glu Ala Leu Arg His Pro Glu Cys Ala Leu Gln Val Leu					
ggg gtt gtt gca gga gta aga acc aag cag	850	855			2575
Gly Val Val Ala Gly Val Arg Thr Lys Gln					
<210> 8					
<211> 858					
<212> PRT					
<213> Homo sapiens					
<400> 8					
Ser Arg Leu Trp Ser Ser Lys Ser Val Thr Glu Ile His Leu Tyr Phe	1	5	10	15	
Glu Glu Glu Val Lys Gln Glu Glu Cys Asp His Leu Asp Arg Leu Phe	20	25	30		
Ala Pro Lys Glu Ala Gly Lys Gln Pro Arg Thr Val Ile Ile Gln Gly	35	40	45		
Pro Gln Gly Ile Gly Lys Thr Thr Leu Leu Met Lys Leu Met Met Ala	50	55	60		
Trp Ser Asp Asn Lys Ile Phe Arg Asp Arg Phe Leu Tyr Thr Phe Tyr	65	70	75	80	

Phe	Cys	Cys	Arg	Glu	Leu	Arg	Glu	Leu	Pro	Pro	Thr	Ser	Leu	Ala	Asp
				85				90					95		
Leu	Ile	Ser	Arg	Glu	Trp	Pro	Asp	Pro	Ala	Ala	Pro	Ile	Thr	Glu	Ile
				100				105				110			
Val	Ser	Gln	Pro	Glu	Arg	Leu	Leu	Phe	Val	Ile	Asp	Ser	Phe	Glu	Glu
				115				120				125			
Leu	Gln	Gly	Gly	Leu	Asn	Glu	Pro	Asp	Ser	Asp	Leu	Cys	Gly	Asp	Leu
				130				135			140				
Met	Glu	Lys	Arg	Pro	Val	Gln	Val	Leu	Leu	Ser	Ser	Leu	Leu	Arg	Lys
				145				150			155			160	
Lys	Met	Leu	Pro	Glu	Ala	Ser	Leu	Leu	Ile	Ala	Ile	Lys	Pro	Val	Cys
				165				170			175				
Pro	Lys	Glu	Leu	Arg	Asp	Gln	Val	Thr	Ile	Ser	Glu	Ile	Tyr	Gln	Pro
				180				185				190			
Arg	Gly	Phe	Asn	Glu	Ser	Asp	Arg	Leu	Val	Tyr	Phe	Cys	Cys	Phe	Phe
				195				200				205			
Lys	Asp	Pro	Lys	Arg	Ala	Met	Glu	Ala	Phe	Asn	Leu	Val	Arg	Glu	Ser
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Cys	Thr	Ser	Leu	Lys	Gln	Glu	Met	Gln	Lys	Gly	Lys	Asp	Leu	Ala	Leu
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Thr	Cys	Gln	Ser	Thr	Thr	Ser	Val	Tyr	Ser	Ser	Phe	Val	Phe	Asn	Leu
				260				265			270				
Phe	Thr	Pro	Glu	Gly	Ala	Glu	Gly	Pro	Thr	Pro	Gln	Thr	Gln	His	Gln
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Leu	Lys	Ala	Leu	Cys	Ser	Leu	Ala	Ala	Glu	Gly	Met	Trp	Thr	Asp	Thr
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Phe	Glu	Phe	Cys	Glu	Asp	Asp	Leu	Arg	Arg	Asn	Gly	Val	Val	Asp	Ala
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Asp	Ile	Pro	Ala	Leu	Leu	Gly	Thr	Lys	Ile	Leu	Leu	Lys	Tyr	Gly	Glu
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Arg	Glu	Ser	Ser	Tyr	Val	Phe	Leu	His	Val	Cys	Ile	Gln	Glu	Phe	Cys
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Ala	Ala	Leu	Phe	Tyr	Leu	Leu	Lys	Ser	His	Leu	Asp	His	Pro	His	Pro
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Ala	Val	Arg	Cys	Val	Gln	Glu	Leu	Leu	Val	Ala	Asn	Phe	Glu	Lys	Ala
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Arg	Arg	Ala	His	Trp	Ile	Phe	Leu	Gly	Cys	Phe	Leu	Thr	Gly	Leu	Leu
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Asn	Lys	Lys	Glu	Gln	Glu	Lys	Leu	Asp	Ala	Phe	Phe	Gly	Phe	Gln	Leu
				405				410			415				
Ser	Gln	Glu	Ile	Lys	Gln	Gln	Ile	His	Gln	Cys	Leu	Lys	Ser	Leu	Gly
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Glu	Arg	Gly	Asn	Pro	Gln	Gly	Gln	Val	Asp	Ser	Leu	Ala	Ile	Phe	Tyr
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Cys	Leu	Phe	Glu	Met	Gln	Asp	Pro	Ala	Phe	Val	Lys	Gln	Ala	Val	Asn
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Leu	Leu	Gln	Glu	Ala	Asn	Phe	His	Ile	Ile	Asp	Asn	Val	Asp	Leu	Val
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Val	Ser	Ala	Tyr	Cys	Leu	Lys	Tyr	Cys	Ser	Ser	Leu	Arg	Lys	Leu	Cys
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Phe	Ser	Val	Gln	Asn	Val	Phe	Lys	Lys	Glu	Asp	Glu	His	Ser	Ser	Thr
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Ser	Asp	Tyr	Ser	Leu	Ile	Cys	Trp	His	His	Ile	Cys	Ser	Val	Leu	Thr
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 Glu Ser Thr Phe Val Thr Trp Cys Asn Gln Leu Arg His Pro Ser Cys
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 Ser Phe Thr Leu Thr Lys Leu Ser Arg Asp Asp Ile Arg Ser Leu Cys
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 Asp Ala Leu Asn Tyr Pro Ala Gly Asn Val Lys Glu Leu Ala Leu Val
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 Asn Cys His Leu Ser Pro Ile Asp Cys Glu Val Leu Ala Gly Leu Leu
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 Thr Asn Asn Lys Lys Leu Thr Tyr Leu Asn Val Ser Cys Asn Gln Leu
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 Asp Thr Gly Val Pro Leu Leu Cys Glu Ala Leu Cys Ser Pro Asp Thr
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 675 680 685
 Cys Glu Tyr Ile Ser Glu Met Leu Leu Arg Asn Lys Ser Val Arg Tyr
 690 695 700
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 Val Lys Cys Phe Ile Thr Ala Ala Gly Cys Glu Asp Leu Ala Ser Ala
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 785 790 795 800
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 Gln Gln Leu Asn Leu Thr Leu Asn Thr Leu Asp His Thr Gly Val Val
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 Met Thr Ser Pro Gln Leu Glu Trp Thr Leu Gln Thr Leu Leu Glu Gln
 1 5 10 15
 ctg aac gag gat gaa tta aag agt ttc aaa tcc ctt tta tgg gct ttt 154
 Leu Asn Glu Asp Glu Leu Lys Ser Phe Lys Ser Leu Leu Trp Ala Phe
 20 25 30
 ccc ctc gaa gac gtg cta cag aag acc cca tgg tct gag gtg gaa gag 202
 Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu
 35 40 45
 gct gat ggc aag aaa ctg gca gaa att ctg gtc aac acc tcc tca gaa 250
 Ala Asp Gly Lys Lys Leu Ala Glu Ile Leu Val Asn Thr Ser Ser Glu
 50 55 60
 aat tgg ata agg aat gcg act gtg aac atc ttg gaa gag atg aat ctc 298
 Asn Trp Ile Arg Asn Ala Thr Val Asn Ile Leu Glu Met Asn Leu
 65 70 75 80
 acg gaa ttg tgt aag atg gca aag gct gag atg gag gac gga cag 346
 Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln
 85 90 95
 gtg caa gaa ata gat aat cct gag ctg gga gat gca gaa gaa gac tcg 394
 Val Gln Glu Ile Asp Asn Pro Glu Leu Gly Asp Ala Glu Glu Asp Ser
 100 105 110

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ccc gac ctg att caa gta gga cac ttc tta ttc ggc ctc gct aac gag Pro Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu 515 520 525	1642
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gac tct tct gtg cgg att ctt tgt gac cac gta acc cgt agc acc tgt Asp Ser Ser Val Arg Ile Leu Cys Asp His Val Thr Arg Ser Thr Cys 690 695 700	2170
cat ctg cag aaa gtg gag att aaa aac gtc acc cct gac acc gcg tac His Leu Gln Lys Val Glu Ile Lys Asn Val Thr Pro Asp Thr Ala Tyr 705 710 715 720	2218
cgg gac ttc tgt ctt gct ttc att ggg aag aag acc ctc acg cac ctg Arg Asp Phe Cys Leu Ala Phe Ile Gly Lys Lys Thr Leu Thr His Leu 725 730 735	2266
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gga ggt cac tgt gcc acc ccg gag cag tgg gct gaa ttc ttc tat gtc Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe Phe Tyr Val 770 775 780	2410

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gcc agt tgc aag gac ctt gct gtc ttg gtt gtc agc aag aag ctg Ala Ser Cys Lys Asp Leu Ala Ala Val Leu Val Val Ser Lys Lys Leu 835 840 845	2602
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 Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln
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 Val Gln Glu Ile Asp Asn Pro Glu Leu Gly Asp Ala Glu Glu Asp Ser
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 Glu Leu Ala Lys Pro Gly Glu Lys Glu Gly Trp Arg Asn Ser Met Glu
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 Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp
 130 135 140
 Asn Phe His Asp Asp Val Thr Leu Arg Asn Gln Arg Phe Ile Pro Phe
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 Ile Leu Ala Gln Ala Gln Arg Ile Leu Phe Val Val Asp Gly Leu Asp
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 Ala Leu Glu Lys Glu Glu Gly Glu Asp Arg Asp Gly His Ala Trp Asp
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 Pro Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu
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 645 650 655
 Asp Leu Arg Ser Leu Arg Leu Trp Thr Asp Phe Cys Ser Leu Phe Ser
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 Cys Asp Leu Leu Arg Asn His Lys Cys Asn Leu Gln Tyr Leu Arg Leu
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 Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe Phe Tyr Val
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 Lys His Phe Leu Gln Met Leu Ser Leu Glu Asn Cys Arg Leu Thr Glu
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 Ala Ser Cys Lys Asp Leu Ala Ala Val Leu Val Val Ser Lys Lys Leu
 835 840 845

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865					870					875					880
Val	Leu	Gln	Gln	Cys	Ser	Ile	Thr	Lys	Leu	Gly	Cys	Arg	Tyr	Leu	Ser
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Pro	Asn	Cys	Asn	Leu	Lys	His	Leu	Arg	Leu	Lys	Thr	Tyr	Glu	Thr	Asn
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Leu	Glu	Ile	Lys	Lys	Leu	Leu	Glu	Glu	Val	Lys	Glu	Lys	Asn	Pro	Lys
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Leu	Thr	Ile	Asp	Cys	Asn	Ala	Ser	Gly	Ala	Thr	Ala	Pro	Pro	Cys	Cys
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240

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288

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Leu Ala Val Leu Arg Trp Ile Lys Gly Glu Met Trp Gln Asn Met Ile	
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Ser Tyr Val Val His Leu Thr Ser His Glu Ile Asn Gln Met Thr Asn	
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Glu Asp Leu Asp Asn Ile Arg Phe Glu Leu Asn Val Asn Glu Ser Ala	
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48

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96

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His	Phe	Pro	Arg	Ile	Pro	Trp	Ala	Asn	Leu	Arg	Ala	Ala	Asp	Pro	Leu
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144

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192

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Lys	Val	Val	Leu	Gly	Ile	Phe	Gln	Thr	Met	Asn	Leu	Thr	Ser	Leu	Cys
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240

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288

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gag cta gaa gaa gaa aca ggg aat gta cag gcc cag gga tgc caa gat Glu Leu Glu Glu Thr Gly Asn Val Gln Ala Gln Gly Cys Gln Asp 130 135 140	432
cca aac caa gaa gaa cca gag atg cta gag gaa gca gac cac aga aga Pro Asn Gln Glu Pro Glu Met Leu Glu Ala Asp His Arg Arg 145 150 155 160	480
aaa tac aga gag aac atg aag gct gaa cta ctg gag aca tgg gac aac Lys Tyr Arg Glu Asn Met Lys Ala Glu Leu Leu Glu Thr Trp Asp Asn 165 170 175	528
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acc ttg gca atg cgg gct atg ctg cac tgg gca aat gga gtt ctc ttt Thr Leu Ala Met Arg Ala Met Leu His Trp Ala Asn Gly Val Leu Phe 225 230 235 240	720
cag caa agg ttc tcc tat gtt ttc tat ctc agc tgc cat aaa ata agg Gln Gln Arg Phe Ser Tyr Val Phe Tyr Leu Ser Cys His Lys Ile Arg 245 250 255	768
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tct gag agc ttg gat gat ggc tcg cca tgt aca gac tgg tac cag gag Ser Glu Ser Leu Asp Asp Gly Ser Pro Cys Thr Asp Trp Tyr Gln Glu 305 310 315 320	960

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